

WHAT IS CLAIMED IS:

1. A method for manufacturing a semiconductor device, comprising:

forming a buried layer of a semiconductor substrate;

5 forming an active region adjacent at least a portion of the buried layer;

forming an isolation structure adjacent at least a portion of the active region;

10 forming a gate oxide adjacent at least a portion of the active region;

forming a polysilicon layer adjacent at least a portion of the gate oxide;

15 removing at least a portion of the polysilicon layer to form a polysilicon definition structure, wherein the polysilicon definition structure at least substantially surrounds and defines an emitter contact region; and

forming an implant region of the emitter contact region, wherein the implant region is self-aligned.

20 2. The method of Claim 1, wherein removing at least a portion of the polysilicon layer to form a polysilicon definition structure comprises:

masking a first portion of the polysilicon layer, leaving a second portion of the polysilicon layer
25 unmasked; and

removing the second portion of the polysilicon layer.

30 3. The method of Claim 1, further comprising forming an implant region of a base contact region, wherein the base contact region is proximate an outer edge of the polysilicon definition structure.

00007073 14004

4. The method of Claim 1, wherein a width of the polysilicon definition structure is approximately 0.4 to 0.6 microns.

5

5. The method of Claim 1, wherein a width of the emitter contact region is approximately 0.6 microns.

6. The method of Claim 1, wherein the isolation structure comprises a local oxidation on silicon (LOCOS) isolation structure.

7. The method of Claim 1, wherein the isolation structure comprises a shallow trench isolation (STI) structure.

8. The method of Claim 1, wherein the active region has a depth of approximately 3.5 microns.

9. The method of Claim 1, further comprising forming an emitter contact at the emitter contact region.

10. The method of Claim 1, further comprising forming one or more spacer structures adjacent the polysilicon definition structure.

11. The method of Claim 1, wherein the spacer structures comprise a nitride.

12. A semiconductor device, comprising:
a buried layer of a semiconductor substrate;
an active region adjacent at least a portion of the
buried layer;

5 an isolation structure adjacent at least a portion
of the active region;

a gate oxide adjacent at least a portion of the
active region;

10 a polysilicon definition structure adjacent at least
a portion of the gate oxide, wherein the polysilicon
definition structure at least substantially surrounds and
defines an emitter contact region; and

15 an implant region of the emitter contact region,
wherein the implant region is self-aligned during
formation.

13. The semiconductor device of Claim 12, further
comprising an implant region of a base contact region,
wherein the base contact region is proximate an outer
20 edge of the polysilicon definition structure.

14. The semiconductor device of Claim 12, wherein a
width of the polysilicon definition structure is
approximately 0.4 to 0.6 microns.

25

15. The semiconductor device of Claim 12, wherein a
width of the emitter contact region is approximately 0.6
microns.

30 16. The semiconductor device of Claim 12, wherein
the isolation structure comprises a local oxidation on
silicon (LOCOS) isolation structure.

5

10

15

20

21. The semiconductor device of Claim 12, wherein the spacer structures comprise a nitride.